Exelon Nuclear

Oyster Creek Generating Station
Route 9 South
PO Box 388
Forked River, NJ 08731

www.exeloncorp.com

RA-09-093

10 CFR 50.73

February 5, 2010

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555 - 0001

Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Licensee Event Report (LER) 2009-005-01, Reactor Scram Following a Transmission Line Lightning Strike, Revision 1

Enclosed is LER 2009-005-01, Reactor Scram Following a Transmission Line Lightning Strike, Revision 1. The LER was revised to add supplemental information as required by Revision 0, and to correct inconsistencies. This event did not affect the health and safety of the public or plant personnel. There are no regulatory commitments made in this LER submittal.

Should you have any questions concerning this letter, please contact James Barstow, Regulatory Assurance Manager, at (609) 971-4947.

Respectfully,

Michael J. Massaro

Michael J. Massaro
Vice President
Oyster Creek Nuclear Generating Station

Enclosure: NRC Form 366, LER 2009-005-01

cc: Administrator, NRC Region 1
NRC Senior Resident Inspector - Oyster Creek Nuclear Generating Station
NRC Project Manager - Oyster Creek Nuclear Generating Station
File No. 09058

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE
Reactor Scram Following a Transmission Line Lightning Strike

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	N/A
07	12	2009	2009	- 005 -	01	02	05	2010	FACILITY NAME: N/A	DOCKET NUMBER: N/A

9. OPERATING MODE
N

10. POWER LEVEL
100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☒ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
James Barstow, Regulatory Assurance Manager	(609) 971-4947

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	FK	BKR	G080	Y	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On July 12, 2009 with the Unit at 100% power in the "Power Operation" mode, a severe electrical storm resulted in multiple lightning strikes on an interconnected 34.5 kV offsite transmission line. These lightning strikes in conjunction with a failure of a line breaker to open caused grid disturbances, a main generator trip on over-excitation, an automatic reactor scram due to the load rejection, and a loss of offsite power to the Startup Transformers.

When the plant experienced the loss of offsite power to the Startup Transformers, both Emergency Diesel Generators (EDGs) started and energized their associated safety related buses. During the event, EDG #1 was slow to tie onto its safety-related bus and the erratic "B" Isolation Condenser (IC) level indication resulted in operators declaring the IC inoperable. An Unusual Event was declared for the loss of power to the Startup Transformers for greater than 15 minutes. All declarations and notifications were made correctly and in a timely manner.

This event is being reported pursuant to: 10CFR50.73(a)(2)(iv)(A) due to automatic actuation of the reactor protection system, isolation condensers, and emergency diesel generators; and 10CFR50.73(a)(2)(v)(D) due to loss of offsite power to the Startup Transformers.

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NARRATIVE

Plant Condition Prior to Event

Event Date: July 12, 2009 Event Time: 0135 EDT
Unit 1 Mode: Power Operation Power Level: 100%

Description of Event

Note: Energy Industry Identification System (EIIS) codes are identified in the following text in brackets as [XX].

On July 12, 2009, a severe electrical storm resulted in multiple lightning strikes on the Q121 transmission line. The affected line is a feed to the 34.5 kV Oyster Creek substation, which then feeds the Oyster Creek Startup Transformers [XFMR]. The lightning strikes in conjunction with a failure of a transmission line breaker [BKR] to open caused grid disturbances, a main generator [GEN] trip on over-excitation with subsequent automatic reactor scram (Turbine Trip), and a loss of offsite power to the Startup Transformers [XFMR].

When the plant experienced the loss of offsite power to the Startup Transformers, both emergency diesel generators (EDGs) [EK] started and energized their associated safety related buses. A Main Steam Isolation Valve actuation occurred due to loss of offsite power, resulting in Isolation Condenser [BL] and Electromatic Relief Valve [RV] actuations. Two post-scram anomalies were associated with this event. EDG #1 took longer than expected to auto sync to its safety-related bus, and erratic "B" Isolation Condenser level indication.

Unusual Event MU-1 was declared for the loss of power to the Startup Transformers SA and SB for greater than 15 minutes. All declarations and notifications were made correctly and in a timely manner. The Unusual Event was terminated at 0405 on July 12, 2009 after restoration of offsite power.

Analysis of Event

This event is being reported pursuant to: 10CFR50.73(a)(2)(iv)(A) due to automatic actuation of the reactor protection system [JC], Isolation Condensers, and EDGs; and 10CFR50.73(a)(2)(v)(D) due to loss of offsite power to the Startup Transformers. There were no safety consequences impacting the plant or public safety as a result of this event.

Two post-scram anomalies were noted with EDG #1 output breaker impacting the auto sync time and the "B" Isolation Condenser erratic level indication. All other safety systems, structures, and components operated normally during this event.

Cause of Event

The 34.5 kV, Q-121 transmission line was struck by lightning. The lightning strike broke the carrier/static line, resulting in a three-phase-to-ground fault. The Q-121 line breaker at Oyster Creek failed to open on the line fault, resulting in the Oyster Creek generator feeding the fault until backup line breakers opened and isolated the line. These grid disturbances caused voltage swings and when the backup line breakers eventually isolated the Q-121 fault, switchyard voltage increased rapidly and the Oyster Creek generator tripped on over-excitation. The latter resulted in an automatic reactor scram (Turbine Trip).

The turbine-generator trip and resultant reactor scram was caused by a failure of the Q-121 line breaker to isolate the faulted transmission line following damage caused by lightning strike. The cause of the line breaker failure was a seized trip latch roller bearing in the opening mechanism of the breaker, resulting in sluggish opening time of the breaker. The line breaker is owned and maintained by First Energy (transmission system operator).

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NARRATIVE

A root cause evaluation determined that trending of past performance of the breaker in the switchyard was not performed. If the breaker performance had been trended, the slow performance during a lightning strike in June 2009 could have been identified and either corrected or the line isolated.

Corrective Actions

Corrective actions included restoring the EDG #1 to full operable status, flushing the Isolation Condenser level indication lines and repairing the Q-121 line breaker. These actions addressed the anomalies noted above.

The Q-121 line breaker was repaired by First Energy. The trip latch roller bearing and linkage mechanism in the Q121 breaker was adjusted, lubricated, and exercised. Post-maintenance timing results were within specification. Lessons learned from that repair and the cause determination were placed in Oyster Creek's CAP database.

The Oyster Creek Performance Monitoring Plan for the switchyard was revised to include breaker maintenance and testing data from opening on a fault to facilitate trending of past performance of the switchyard breaker.

Previous Occurrences

There have been no similar Licensee Event Reports submitted due to lightning strikes at Oyster Creek in the last three years. However, there was a lighting strike in June 2009 on the Q-121 transmission line which resulted in a less severe grid disturbance and no plant scram occurred.

Component Failure Data

Component: Transmission Line Breaker
Manufacturer: General Electric
Cause: Seized trip latch roller bearing in the opening mechanism of the breaker